

What is claimed is:

1 1. Apparatus for deriving a channel map for a digital television
2 (DTV) receiver comprising:
3 a processor including a channel map data structure;
4 a tuner, controlled by the processor to tune to a specified channel and
5 provide a tuned television signal having an amplitude;
6 an amplitude detector coupled to the tuner to provide a measure of the
7 amplitude of the tuned television signal; and
8 a comparator, configured to compare the measure of amplitude provided
9 by the amplitude detector to a threshold value and to provide an output signal having a
10 first value if the measure of amplitude is greater than the threshold value and having a
11 second value otherwise;
12 wherein the processor is responsive to the output signal of the
13 comparator having the first value, to change a value in the channel map data structure
14 to indicate that a the specified channel is received by the DTV receiver.

1 2. Apparatus according claim one, wherein:

2 the DTV receiver further includes a demodulator which demodulates the
3 tuned television signal provided by the tuner to provide a baseband DTV signal; and

4 the processor further includes:

5 a user interface through which a user may cause the tuner to tune
6 to a channel frequency indicated as being received by the DTV receiver in the
7 channel map; and

8 means for monitoring the output signal of the demodulator to
9 determine if the baseband DTV signal is present and for adjusting the threshold
10 value if the baseband DTV signal is not present.

1 3. Apparatus according to claim 2, wherein the demodulator further
2 provides a measure of estimated noise in the received DTV signal and the means for
3 monitoring the output signal of the demodulator to determine if the baseband DTV
4 signal is present, includes means for obtaining the measure of estimated noise from
5 the demodulator if the baseband DTV signal is present and means for adjusting the
6 threshold value based on the measure of estimated noise.

1 4. Apparatus for deriving a channel map for a digital television
2 (DTV) receiver comprising:

3 a processor including:

4 a channel map data structure configured to contain data values
5 indicating specific channel frequencies that are received by the DTV receiver;
6 and

7 a user interface through which a user may specify a desired
8 channel frequency from among the channel frequencies contained in the
9 channel map data structure;

10 a first tuner, controlled by the processor to tune to a specified channel
11 and provide a first tuned television signal having an amplitude;

12 a second tuner, controlled by the processor in response to a desired
13 channel frequency entered by the viewer through the user interface to provide a
14 second tuned television signal;

15 a demodulator, coupled to the second tuner to demodulate the second
16 tuned television signal to recover a baseband DTV signal therefrom;

17 an amplitude detector coupled to the first tuner to provide a measure of
18 the amplitude of the tuned television signal; and

19 a comparator, configured to compare the measure of amplitude provided
20 by the amplitude detector to a threshold value and to provide an output signal having a
21 first value if the measure of amplitude is greater than the threshold value and having a
22 second value otherwise;

23 wherein the processor is responsive to the output signal of the
24 comparator having the first value, to change a value in the channel map data structure
25 to indicate that a the specified channel is received by the DTV receiver and is
26 responsive to the demodulator to increase the threshold value if the demodulator does
27 not provide a baseband signal for the channel frequency requested by the user.

1 5. Apparatus according to claim 4, wherein the second tuner further
2 provides a measure of estimated noise in the received DTV signal and the processor
3 includes means for obtaining the measure of estimated noise from the second tuner
4 when the baseband DTV signal is present and means for adjusting the threshold value
5 based on the measure of estimated noise.

1 6. A method for deriving a channel map for a digital television
2 (DTV) receiver comprising the steps of:

3 tuning the DTV receiver to a specified channel frequency to provide a
4 tuned television signal having an amplitude;

5 measuring the amplitude of the tuned television signal;

6 comparing the measure of amplitude to a threshold value to determine if
7 sufficient signal amplitude exists at the specified channel frequency to indicate a valid
8 channel; and

9 adding an indication that the specified channel is present to the channel
10 map responsive to the comparing step indicating that the specified channel frequency
11 has sufficient signal amplitude to indicate is a valid channel.

1 7. A method according to claim 6, further comprising the steps of:

2 tuning the DTV receiver to a channel frequency indicated as being
3 present in the channel map;

4 demodulating the tuned television signal; and

5 changing the threshold value if the demodulated tuned television signal
6 is not a baseband DTV signal.

1 8. A method according to claim 7, further including the steps of
2 calculating the threshold value as a function of noise in the tuned television signal and
3 whether any channel in the channel map does not correspond to a DTV signal; and

4 measuring the noise in the tuned television signal when the demodulated
5 tuned television signal is a baseband DTV signal;

6 wherein the step of changing the threshold value if the demodulated
7 tuned television signal is not a baseband DTV signal includes the step of setting a
8 value indicating that a channel in the channel map does not correspond to a DTV
9 channel.

1 9. A method according to claim 6, further including the step of
2 repeating the method of claim 6 for all possible channel frequencies that may be tuned
3 by the DTV receiver.

1 10. A method according to claim 9, further including the step of
2 periodically repeating the method of claim 9 at predetermined intervals to maintain a
3 current channel map.